

DOWD, J.

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF OHIO
EASTERN DIVISION

Olusegun Falana,)	
)	CASE NO. 5:08 CV 720
Plaintiff,)	
)	
v.)	<u>FINDINGS OF FACT, CONCLUSIONS</u>
)	<u>OF LAW AND ORDER</u>
Kent State University, et al.,)	
)	
Defendants.)	
)	

This action for correction of inventorship of Patent No. 6,830,789¹ (the ‘789 Patent) pursuant to 35 U.S.C. § 256 is before this Court on federal question jurisdiction.² The ‘789 Patent lists three inventors - Joseph Doane (Doane), Asad Khan (Khan), and Alexander Seed (Seed). Plaintiff Olusegun Falana (Falana) claims that he was a co-inventor of the ‘789 Patent, but was not included as an inventor on the patent. The ‘789 Patent is owned by Kent Displays, Inc. (KDI) and Kent State University (KSU), who, in addition to the named inventors, were also named as defendants in this case. Neither plaintiff nor defendants demanded a jury trial.

After this action to correct inventorship was filed, defendants Doane and Khan filed documents stating that they have no disagreement with the addition of plaintiff as an inventor on the ‘789 Patent. KDI, Doane and Khan moved to be dismissed as a consequence, and the Court granted their motion and dismissed KDI, Doane and Khan from the case. *See* ECF 66.

¹ Plaintiff’s Ex. 32.

² The complaint also sought injunctive relief regarding maintenance of the ‘789 Patent, but that issue was resolved prior to trial.

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However, the remaining defendant inventor, Seed, has not consented to the addition of plaintiff as an inventor. Therefore, Seed and KSU remain as defendants and maintain that plaintiff was not an inventor of the '789 Patent, necessitating a trial on the issue of inventorship.

Before trial, each side submitted trial briefs and proposed findings of fact and conclusions of law. *See* ECF 74, 76 and 83. A joint fact stipulation was provided to the Court prior to trial (ECF 75) which the parties supplemented at the outset of the trial. *See* ECF 88, pp. 6-12.³

A four-day bench trial was conducted, at which the three named inventors of the '789 Patent, as well as the plaintiff, testified. Each witness gave lengthy testimony, during which time the Court had an opportunity to evaluate their demeanor and credibility. After considering the witness testimony and all of the admitted documentary evidence, the Court makes its Findings of Fact and Conclusions of Law pursuant to Fed. R. Civ. P. 52(a).

Each of the Court's Findings of Fact and Conclusions of Law represent the Court's consideration of all of the evidence in light of the pertinent law and the Court's consideration and evaluation of the witnesses' qualifications, demeanor and credibility. Further, any conclusion of law that may be construed to include a finding of fact is hereby adopted as a finding of fact. *See Reznick v. Provident Life and Accident Insurance Co.*, 364 F. Supp. 2d 635, 636 (E.D. Mich. 2005).

³ In ECF 83-2, the parties agreed to stipulate to 1, 3, 4, 5, 12, 13, 17, 19 (with a period after the word temperatures), 24, 25 (with "spring" substituted for "April"), 26 (with "crystalline mixture" substituted for "crystals"), 31, 36, 37 (with "in E44 host only" inserted after + 70°C), 41 (with "in E44 host only" inserted after + 70°C), 47, 48 (with "However," deleted), 50, 51, 55, 59, 60, 64, and 66-69.

In ECF 83-1, the parties agreed to stipulate to 1, 2, 4 (with "synthesized" substituted for "invented"), 8 (with "synthesized" substituted for "invented"), 9, and 11 (with "synthesized" substituted for "invented").

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The Court's use of headings is for convenience only. In some cases, the same or similar findings are repeated under different headings. However, if a Finding of Fact or Conclusion of Law is pertinent to any other finding of fact or conclusion of law contained herein other than that indicated by the heading under which it appears, that finding or conclusion is adopted as a finding or conclusion applicable to such other determinations as may be appropriate. *Id.*

The Court's Findings of Fact are supported by trial testimony, exhibits, the Court's evaluation of the credibility of the witnesses, and all the evidence before it. All of the Court's Findings of Fact are supported by the record and the Court's determinations regarding witness credibility.

I. THE COURT'S FINDINGS OF FACT

A. The KDI Research Project

1. KDI is a privately owned corporation that was established in 1993. Doane Testimony, Tr. p. 54. KDI, a spin-off technology company from KSU, designs and manufactures advanced liquid crystal displays used in electronic devices, such as cell phones, PDA's, digital cameras, e-books, etc. Doane Testimony, Tr. p. 55; ECF 75, 3; ECF 83-2, 1.
2. Doane, formerly a faculty member at Kent State University, retired from KSU in 1997. Doane is employed by KDI as a full-time salaried employee whose title during the time-frame relevant to this litigation was "technology officer" or "chief science officer." Doane is also a shareholder of KDI, along with other shareholders, including KSU. Doane Testimony, Tr. pp. 54-55, 57.

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3. Khan was employed at KDI and worked under Doane's supervision during the relevant time periods in this case. Doane Testimony, Tr. pp. 57-58.

4. In 1997, KDI undertook a research project to develop chiral additives (KDI Project). ECF 75, 4; Doane Testimony, Tr. p. 61. Chiral additives are chemical compounds often used as a component in liquid crystal displays, and can be used to improve the performance characteristics of liquid crystal displays, such as color, contrast, and brightness. ECF 75, 6; ECF 83-2, 3. Chiral additives dissolved in nematic hosts are used in certain electronic devices to display an image without the use of a battery. Doane Testimony, Tr. pp. 65-68.

5. In undertaking the KDI Project, KDI sought to develop proprietary chiral additives with three particular characteristics: 1) high twisting power; 2) solubility in commercially purchased nematic hosts; and 3) temperature independence, and to obtain its own patents in order to avoid having to license other patents in the field. ECF 75, 5; ECF 83-2, 4; Doane Testimony, Tr. pp. 64-65.

6. The KDI Project was funded by grants from the Defense Advanced Research Project Agency (DARPA), and later from the National Science Foundation (NSF). These grants to KDI totaled over \$500,000. Doane Testimony, Tr. pp. 60, 101, 153. However, the '789 Patent which was obtained as a consequence of the work performed pursuant to these grants ultimately had no commercial value to KDI. Doane Testimony, Tr. pp. 151-52.

7. To develop chiral additives for use in nematic hosts, KDI needed the help of an expert in organic synthesis. ECF 83-2, 5. Seed is an Associate Professor at KSU,⁴ and KDI contracted

⁴ Seed is an organic chemist with a Ph.D. from the University of Hull in the United Kingdom. (continued...)

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with KSU for Seed to synthesize and develop these chiral additives for KDI. In developing these chiral materials, Seed intended to utilize a “shotgun approach” and focused on inexpensive materials that were commercially available. Seed Testimony, Tr. pp. 282, 286, 292-93, 300-01.

8. Due to other demands on his time, Seed decided that he was unable to pursue the laboratory research required by the KDI Project. In the September of 1997, Seed determined that a Ph.D. was required to pursue this research, and he placed an ad in a trade magazine seeking a post-doctoral researcher to synthesize chiral organic molecules for the KDI research project. Defendants’ Ex. E. ECF 83-2, 12. Falana, who received his Ph.D. in chemistry from Brandeis University as a synthetic method development chemist, was selected by Seed for the advertised position, starting on January 1, 1998. ECF 83-2, 12-13. Falana’s background provided him with an understanding of and some experience in synthesizing chiral molecules. Falana Testimony, Tr. p. 192-94; Plaintiff’s Ex. 2.

9. Falana’s salary at KSU was to be paid first by the DARPA grant funding the KDI project, then by the NSF grant. The NSF grant application prepared by Doane lists Dr. John West, the Director of KSU’s Liquid Crystal Institute, as the “Research Institution Investigator.” The grant application included a proposed plan for synthesis of desired chiral materials with high twisting power. Both Seed and Falana are each separately listed as “Co-Research Institution Investigator.” Those titles accurately describe the roles Seed and Falana played in the KDI Project. Doane Testimony, Tr. pp. 59-61, 99-105; Plaintiff’s Ex. 26. The work of both co-

⁴(...continued)

Kingdom, and began working at KSU as an associate professor in 1996. Seed Testimony, Tr. pp. 279-80.

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research institution investigators, Seed and Falana, led to the discovery of the novel chiral materials which are the subject of the '789 Patent.

10. At some point, Seed prepared a list of ideas he had for synthesizing chiral additives of interest for the KDI Project, which he calls the "White Paper." Seed Testimony, Tr. p. 290. The date that Seed prepared the White Paper is unknown.⁵ However, whenever the White Paper was prepared, Seed did not provide a copy of the White Paper to Falana.⁶ Falana and Seed agree that some of the concepts in Seed's White Paper were discussed between them. However, tartrate derivatives were not discussed. Falana Testimony, Tr. pp. 245-48.

11. The White Paper listed certain compounds for testing in the following priority: phenyl-cyclohexyl, oxazolines, chiral biphenyls, tartrate derivatives, quinidine derivatives (as tartrates). Defendants Ex. D. Dr. Falana started work on the KDI Project synthesizing biphenyl and oxazoline derivatives, and by Spring 1998, submitted samples of both biphenyl and oxazoline derivatives to KDI for testing. ECF 83-2, 25. These sample materials, however, performed poorly in the liquid crystalline mixture due to a lack of helical twisting power. ECF 83-2, 26.

⁵ Seed testified that he prepared the White Paper before Falana arrived at KSU to begin his work on the KDI project in 1998. However, it appears from an examination of the original document, Defendants' Ex. D (original), which was provided to the Court during the trial, that a different pen was used to date the document "10/19/97" than was used to record the contents of the White Paper. This raises a question as to when the White Paper was prepared and dated, and as a consequence, the Court cannot conclude that the White Paper was prepared on the date indicated.

⁶ Falana testified that Seed did not give him a copy of the White Paper. Falana Testimony, Tr. p. 189. Seed testified that he could not recall if he gave a copy of the White Paper to Falana, and there is no written documentation supporting a conclusion that Seed gave the White Paper to Falana. Seed Testimony, Tr. p. 301.

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12. Seed expected Falana to work independently and have ideas of his own in working on the KDI Project.⁷ Seed Testimony, Tr. 412. In synthesizing compounds for the KDI Project, Falana synthesized compounds suggested by Seed and synthesized compounds “of his own accord.” Seed Testimony, Tr. pp. 357-58; Falana Testimony, Tr. pp. 215-16, 218.

13. KDI and KSU worked closely together in connection with the KDI project. Seed, Falana, Doane and Khan were physically located in Kent, Ohio, and regularly interacted with each other during the course of project. Falana synthesized numerous compounds while working on the KDI project. ECF 75, 8. Compounds synthesized by Falana were tested by Khan at KDI to determine their helical twisting power, solubility in a commercial liquid host material, and performance over a range of temperatures. ECF 83-2, 19. The outcome of that testing was communicated by Khan to Seed, Falana, and Doane, and communications based on test results regarding future work to achieve project goals regularly took place among Khan, Doane, Seed and Falana. In addition, Falana, Seed, Doane and Khan met regularly - usually biweekly - to “discuss the project, where it was going, and various ideas for modifying molecular structures . .

⁷ Seed did not expect the same independent thinking from Margaret Walsh, who was hired by Seed after Falana left KSU in Fall 1999. Unlike Falana, Margaret Walsh did not have a Ph.D. However, Seed determined that the need for independent thinking was no longer necessary to the project because Compound 9 had been synthesized and “we had more direction here. We knew exactly what types of compounds that we needed to make. . . . Maggie had a very different relationship . . . we would tell her exactly what we needed her to make . . . then we would give her the next compound to make.” Seed Testimony, Tr. pp. 359, 412. Walsh merely assisted Seed. However, Falana did not merely assist Seed, but pursued research on the KDI Project on his own accord, and the results of that research contributed to the conception of the claimed invention.

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It was very much a team process.” Seed Testimony, Tr. p. 302.⁸ The very goal of the KDI Project was to develop novel chiral compounds and secure a patent - that is, to conceive patentable compounds. The success of the KDI Project and the conception of the invention claimed in the ‘789 Patent are inseparable and two sides of the same coin.

14. In addition to regular meetings to discuss ideas for achieving the projects goals, the record is replete with written communications during the course of the KDI Project among Falana, Khan, Seed and Doane regarding synthesized compounds, test results, and next steps to achieve the projects goals. *See eg.* Khan Testimony, Tr. p. 169; Plaintiff’s Exs. 6 and 19. Khan, who is an inventor on the ‘789 Patent described the entire interaction between Falana, Seed, Khan and Doane as “collaborative.” Khan Testimony, Tr. p. 164 (“The whole program was collaborative in nature.”).

15. The path to success in the KDI Project was neither direct nor quick. Seed described the research process as a “shotgun approach,” and a paper authored by Seed, Falana, Doane and Khan described the research as “largely trial and error.”⁹ Numerous chemical compounds were

⁸ In Seed’s absence, Falana was the KDI Project research team member who made the presentation regarding KDI’s progress on the project for a “major [DARPA] review” in June 1998. Doane Testimony, Tr. pp. 83-85; Plaintiff’s Ex. 13.

⁹ Doane, Khan, Seed and Falana jointly authored a publication entitled “High Twisting Power Chiral Materials for Cholesteric Displays” which describes the research which was the subject of the KDI Project, and includes compounds 7 and 9, described *infra*. This publication disclosed the inventive technology of the ‘789 Patent, and describes as a breakthrough discovery the design of chiral additives from TADDOL compounds for use in cholesteric displays to achieve with a single chiral additive a helical twisting power (HTP) that is independent of temperature, but acknowledges that “[a]t this stage of development, finding a chiral additive and host that exhibit a temperature independent HTP is largely trial and error.” The publication describes compound 9 as showing a “nearly temperature independent HTP in nematic host

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synthesized and approximately five to ten commercially available nematic hosts were considered during the course of the KDI Project as the KDI Project team worked to achieve their goals.

16. The solubility and temperature independence of a chiral material was dependant on the nematic host in which the material was dissolved. A chiral material may demonstrate temperature independence in one host, but not in another. Doane Testimony, Tr. pp. 69-71.

17. During the course of this “trial and error” “shotgun approach” described by Seed, many compounds - both SS and RR enantiomers - were synthesized by Falana and Seed and tested by Khan.¹⁰ RR and SS enantiomers are identical except for the direction of helical twist. Whether the synthesized chiral additive was SS or RR made no difference in the amount of twisting power of the chiral additive, only the direction of the twist. That is, the helical twist of a SS chiral additive is opposite of the helical twist of a RR chiral additive. Seed Testimony, Tr. pp. 394-95, 422-23.

18. During the course of his work on the KDI Project, Falana regularly communicated and met with Seed, Doane and Khan regarding the results and direction of the KDI Project. Falana synthesized compounds suggested by Seed, as well as compounds that resulted from his own independent ideas regarding the direction to success. Falana had purchasing privileges for the

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mixture A. However, in other nematic mixtures, the same temperature independence is not observed. . . . This demonstrates the need to customize chiral materials based on nematic host mixtures.” Doane Testimony, Tr. pp. 70, 110-114; Plaintiff’s Ex. 33.

¹⁰ Appendix A to the draft final report for phase 1 of the NSF grant reflects that both RH (RR) and LH (SS) chiral additives were synthesized as part of the “trial and error” “shotgun approach” utilized in the KDI Project to identify chiral additives which demonstrated helical twisting and temperature independence in various commercially available nematic hosts. Plaintiff’s Ex. 36.

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KDI Project, and both selected and purchased materials for use in his research for the KDI Project. Falana Testimony, Tr. pp. 214-16; ECF 75, 7. Developing chiral compounds from commercially available materials that were inexpensive was one of the goals of the KDI Project.

19. During the course of his work on the KDI Project, Falana developed a synthesis protocol in or around March, 1999 for making not previously known naphthyl substituted TADDOLs (the Synthesis Protocol).¹¹ The Synthesis Protocol is reflected in columns 7 and 8 of the '789 Patent¹² as the method by which the claimed compounds - naphthyl substituted TADDOLs - were synthesized.¹³ The Synthesis Protocol can be used to synthesize both RR and SS naphthyl substituted TADDOLs. Falana Testimony, Tr. pp. 223-31.

20. In March or April 1999, Falana utilized the Synthesis Protocol to make a novel compound - Compound II-93-195¹⁴ - in the course of his work on the KDI Project, as recorded in his research notebook II. Falana submitted Compound II-93-195 to Khan for testing, which Khan labeled as Compound 7.¹⁵ Khan Testimony, Tr. p. 173. The parties used Compound II-93-

¹¹ The Synthesis Protocol found in Falana's research notebook II.

¹² The Synthesis Protocol is also contained in the provisional patent application which preceded the '789 Patent. Plaintiff's Ex. 30.

¹³ Compound 9, synthesized by Seed using the Synthesis Protocol after Falana left KSU, formed the basis for the '789 Patent.

¹⁴ The parties agree that this compound was synthesized by Falana and recorded in his laboratory notebook II. ECF 83-1, 4, 8. Falana followed the convention of identifying the compounds he synthesized by correlating the compound identification to the number and page of his research notebooks which contain the information regarding the synthesis of that compound. Falana Testimony, Tr. p. 204.

¹⁵ The chiral molecule cross referenced at KDI 76 and 77 correlates the compounds
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195 and Compound 7 interchangeably in the trial. Compound 7 is a naphthyl substituted TADDOL.¹⁶ The Synthesis Protocol can be used to synthesize other naphthyl substituted TADDOLs. Falana Testimony, Tr. p. 208, 253.

21. When tested by KDI, Compound 7, or II-93-195, exhibited substantial temperature independence between -20 and +30 degrees Centigrade in the E-44 host, but did not exhibit temperature independence outside that range. Doane Testimony, Tr. pp. 77-78. However, Compound II-93-195's temperature independence in that range was considered a "great improvement" because the "new molecule clearly has a smaller slope." Plaintiff's Ex. 24; Khan Testimony, Tr. pp. 176-77. Compound 7 is referenced in the publication titled "High Twisting Power Chiral Materials for Cholesteric Displays." ECF 75, 10; ECF 83-1, 9 and 11. In this "trial and error" research project as described by Seed, the relative temperature independence of Compound 7 between -20 and +30 degrees Centigrade represented significant progress toward the KDI Project team's goal to develop a novel chiral compound that exhibited temperature independence over a broader range for the purpose of obtaining a patent on such a compound.¹⁷

¹⁵(...continued)

submitted to Khan for testing with the compound identification numbers Khan assigned to them. Submitted compounds beginning with a roman numeral were compounds prepared by Falana, compounds beginning with AS were prepared by Seed, and compounds beginning with MW were prepared by Margaret Walsh. See Plaintiff's Ex. 21; Khan Testimony, Tr. pp. 173-74.

¹⁶ TADDOL is an acronym for a general class of compounds. The compounds covered by the '789 Patent are different from the general class of TADDOL compounds in that they involve an aryl that is a substituted naphthyl. TADDOLs with a substituted naphthyl, rather than a phenyl, substituted phenyl, or naphthyl, were not previously known.

¹⁷ Falana's joint contribution to the conception of the claimed invention in the '789 Patent is documented in the previously discussed exhibits corroborating his collaboration with the
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22. KDI's stated goals in pursuing the KDI Project was to pursue its own intellectual property with respect to novel chiral additives to avoid having to obtain licenses under other patents. During the time Falana was part of the KDI Project team, Doane authored a letter dated April 13, 1999, to the Immigration and Naturalization Service (INS) in support of Dr. Falana's immigration status.¹⁸ The letter describes the KDI Project and the DARPA funding, and then goes on to describe Falana's role in the KDI Project:

"Dr. Falana is actively involved in these projects and is the sole organic chemist responsible for the synthesis of the chiral materials. Thus, our research is critical and of immense import to the U.S. national interest. Dr. Falana joined our research team in January 1998. His outstanding performance led to a patent we are currently preparing and a proposal we have submitted to NSF in December 1998. With this grant, we shall renew Dr. Falana's current contract, which ends on July 31."

Doane Testimony, Tr. pp. 87-90; P. Ex. 25.

23. At trial, Doane attempted to downplay Falana's work on the KDI Project to develop novel chiral additives for the purpose of obtaining a patent. Doane's explanation of this language at trial was that "[Falana] contributed to the patent in the sense that the whole subject of this research was to develop intellectual property that would help us - prevent us from being blocked from a foreign patent that was blocking us at the time. We wanted to develop our intellectual property. It was in our minds all along that if we were successful in this research we would write a patent." Doane Testimony, Tr. p. 90. Doane testified at trial that in writing this

¹⁷(...continued)
inventors and in the exhibits, including Plaintiff's Exs. 16, 17, 18, 22, 23, 32, 50, and 51.

¹⁸ According to Doane's testimony at trial, the INS letter is fraught with false statements, which calls into question the veracity and credibility of this witness.

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letter to the INS he was not attempting to mislead the INS about Falana's role in the project or the status of the patent, but to be supportive of Falana who he considered to be a "very capable chemist and an asset to this country" and to do him "a favor."

Doane Testimony, Tr. p. 147.

24. In August, 1999, Dr. Falana resigned from KSU in favor of another position, ending his employment on September 30, 1999. ECF 83-2, 48.

25. Falana recorded his research on the KDI Project in three research notebooks. Plaintiff's Exs. 16, 17 and 18. While at KSU, Falana kept his research notebooks under his control, and those notebooks contained only material recorded by Falana until Falana left KSU and turned the three notebooks over to Seed at Seed's request. Falana Testimony, Tr. pp. 195-203.

Maintaining the integrity of a research notebook was a protocol that Seed himself followed, and was a protocol Seed expected from Falana with respect to Falana's research notebooks for the KDI Project. Seed Testimony, Tr. pp. 405-10.

26. When Falana left KSU, Doane directed Seed to sign and date Falana's notebooks "just in case anything was done in the future regarding patenting." Seed Testimony, Tr. p. 313. In response to Doane's request to identify materials in Falana's notebook that may be important in pursuing a patent, after Falana left KSU in Fall 1999, Seed initialed and dated certain pages of Falana's research notebooks with the dates "12/8/98" or "2/5/99". Falana Testimony, Tr. pp. 202-03. All of the pages Seed initialed are dated either 12/8/98 or 2/5/99.

Seed had no explanation at trial why he selected certain pages in Falana's research notebooks to sign and date while leaving other pages unsigned and undated, or how to reconcile

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his deposition testimony with the dates in Falana's research notebooks and his testimony at trial. Seed Testimony, Tr. p. 411. Seed's testimony at trial as to when he initialed and dated Falana's research notebooks is inconsistent with his deposition testimony on that same subject. At trial, Seed testified that he initialed and dated Falana's notebooks on the actual date reflected in the notebooks. At his deposition, Seed testified that the only time he looked at plaintiff's research notebooks was after Falana left KSU in Fall 1999. Seed's deposition testimony is consistent with Falana's testimony that his research notebooks did not contain any dates and initials by Seed when Falana turned his research notebooks over to Seed in September 1999. At trial, Seed acknowledged the conflict in his testimony and claimed that his deposition testimony was in error.

After listening to Seed's testimony at trial and considering his deposition testimony for the purposes of determining credibility, the Court concludes that Seed's trial testimony that he initialed and dated Falana's research notebooks on the dates indicated (12/8/98 or 2/5/99) is not credible, and concludes that Seed initialed and back-dated Falana's research notebooks after Falana left KSU. *See* Seed Testimony, Tr. pp. 409-11.

27. After Falana left KSU in September 1999, and approximately three years after the KDI Project commenced and numerous compounds had been synthesized and tested¹⁹ by Falana and Seed, Seed synthesized AS713 sometime between January 20, 2000 and March 13, 2000, using the Synthesis Protocol. Seed Testimony, Tr. pp. 310-11. KDI catalogued compound AS713 as Compound 9. ECF 83-2, 55. As described by Seed, the difference between Compound 9 and

¹⁹ *See eg.* Plaintiff's Ex. 21.

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Compound 7 is as follows: “If the R is the C7 chain, that would be Compound 7 made by Dr. Falana. Also, if it was the benzyl oxy, it would be Compound 9 that I made.” Seed Testimony, Tr. p. 353.

28. When tested by KDI, Compound 9 exhibited substantial temperature independence in host material E-44 between -20 and +70 degrees Centigrade. After years of “trial and error” team work utilizing a “shotgun” approach on the KDI Project, after numerous starting materials were purchased and compounds were synthesized by Falana and Seed, after innumerable memos, e-mails and meetings among Falana, Seed, Doane and Khan “to discuss the project, where it was going, and various ideas for modifying molecular structures,” the combined collaborative efforts of the KDI Project research team reached its stated goal of conceiving a novel chiral compound for patenting. Seed Testimony, Tr. 327-28.

29. A Draft Final Report for the NSF Grant in Appendix A reports the temperature dependance and helical twisting power of various right SS and RR compounds that were synthesized and tested in connection with the NSF funding of the KDI Project. Both Compound 7, a SS compound, and Compound 9, a RR compound, are reported in the Draft Final Report for the NSF Grant in Appendix A. Doane Testimony, Tr. pp. 105-110.

30. After Falana left KSU and the KDI Project in September 1999, he was in communication with one or more of the named inventors in the 2000 to 2001 time period and was advised the patent application was being prepared. After the ‘789 Patent was issued on December 14, 2001, Falana learned from Khan that it had issued, and plaintiff discovered that he was not named as an inventor. In April 2005, plaintiff inquired of Doane as to why plaintiff was not named as an

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inventor. Falana Testimony, Tr. pp. 265-67, Plaintiff's Ex. 43. After receiving an unsatisfactory response from Doane, Falana secured the assistance of counsel and ultimately pursued this litigation.

31. Falana's testimony that he contributed to the conception of the claimed invention in the '789 Patent by developing the Synthesis Protocol and subsequent synthesis of Compound 7 is corroborated by the documentary evidence and the testimony of defendants' witnesses, notwithstanding the repeated efforts of defendants' witnesses to re-characterize past events for the purpose of defeating Falana's claim. There are numerous examples in the record of the questionable credibility and veracity of defendants' witnesses, and the post-litigation discovery by these witnesses of various errors, inaccuracies, mistakes and omissions in the contemporaneous physical record that would otherwise support plaintiff's claim for joint inventorship. For example, Doane testified that the contents of his letter to the INS regarding Falana's role on the KDI Project and with respect to the '789 Patent was not correct. Similarly, Seed's testimony regarding the accuracy of the contents of the paper that was authored by Seed, Falana, Khan and Doane, the accuracy of the '789 Patent and related documentation, and the conflict in Seed's testimony regarding the signing and dating of Falana's research notebooks left the Court with the firm conclusion that the named inventors' present testimony regarding past events and documentation is not credible and shaped by the filing of this litigation in an attempt to recast past events to support Falana's exclusion as a joint inventor of the '789 Patent.

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In considering all of the evidence before it, the Court concludes that plaintiff established by clear and convincing evidence that he made a significant contribution to the aggregate efforts of the KDI Project team resulting in the conception of the invention claimed in the '789 Patent.

B. The '789 Patent

1. An invention disclosure was prepared and signed on May 25, 2000, and U.S. Provisional Patent Application No. 60/210,485 was then filed on June 9, 2000. ECF 83-2, 59; ECF 83-2, 60.

2. On June 8, 2001, an international patent application under the Patent Cooperation Treaty ("PCT"), claiming priority from the provisional application, was filed as PCT/US01/14842. ECF 83-2, 66. The PCT application was published on December 20, 2001. ECF 83-2, 67. The '789 Patent was based on the PCT application, which published as US 2002/0187281 on December 12, 2002. ECF 83-2, 68. On December 14, 2004, U.S. Patent No. 6,830,789 ("the '789 patent") issued. ECF 83-2, 69.

3. The inventors identified on the '789 Patent are Doane, Khan and Seed. The '789 Patent is owned by KDI and KSU.

4. Doane and Khan each signed statements addressed to the Commissioner of Patents on June 23, 2008 stating:

- 1) I am a co-inventor of the subject matter claimed in the ['789 Patent].
- 2) I have no disagreement with the addition of Olusegun Falana as a named co-inventor of the ['789 Patent].
- 3) This statement may be filed with the USPTO to request correction of inventorship of U.S. Patent No. 6,830,789 to add Olusegun Falana as a co-inventor . . .

Plaintiff's Ex. 46.

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Doane testified at trial that the above statement, which he signed for submission to a United States District Court and the United States Patent and Trademark Office, was not prepared because he thought Falana was actually an inventor and therefore should be properly added as a named inventor, but “was prepared to help get [me] out of this lawsuit.” Doane Testimony, Tr. p. 148.

5. Work on the KDI Project, which resulted in the ‘789 Patent, was performed at Kent State University’s Liquid Crystal Institute and some of the work was performed at KDI. Doane Testimony, Tr. pp. 55-56.

6. The Synthesis Protocol, developed by Falana, is reflected in the ‘789 Patent as the protocol utilized to synthesize the chiral compound which is the subject of the claimed invention.

7. Claim 1 of the ‘789 Patent claims an optically active RR compound with a substituted naphthalene ring, but does not claim independence of helical twisting power with temperature. A substituted naphthalene ring is a characteristic of both Compound 7 and Compound 9.

8. The compound depicted in the drawing in Claim 1 is a RR chiral compound. Compound 9 is a RR enantiomer. Compound 7 is a SS enantiomer.

9. Claim 23 claims a RR chiral material. Claim 25, which is dependant on Claim 23, claims a chiral material different from that claimed in Claim 23, and “having an opposite twist sense.” A SS chiral material has an opposite twist from a RR chiral material. Neither Claim 23 nor Claim 25 claim independence of helical twisting power with temperature.

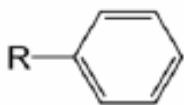
10. According to Seed’s testimony at trial, there are a variety of errors and omissions in the ‘789 Patent, including the nature of the claimed invention, as well as numerous examples of

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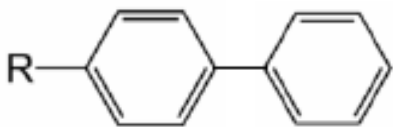
“old” chemistry that are not listed in the “References Cited” section of the ‘789 Patent. Seed Testimony, Tr. pp. 387-424. After observation of this witness and consideration of his testimony in the context of all the evidence, the Court concludes that the testimony of this witness to downplay Falana’s role in the conception of the invention of the compound claimed in the ‘789 Patent is not credible.

C. Chemistry

1. In organic chemistry, a phenyl group is a hydrocarbon having six carbon atoms and 5 hydrogen atoms, where the six carbon atoms are arranged in a cyclic ring structure. ECF 75, 11.
2. The symbol often used for a phenyl group is:



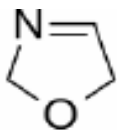
and the symbol often used for biphenyl group (two phenyls) is:



ECF 75, 12.

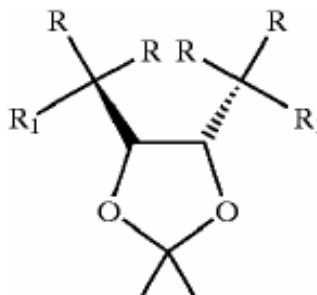
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3. Oxazoline is a chemical compound with the formula C_3H_5NO arranged in a five-sided ring. The symbol often used for an oxazoline compound is:



ECF 75, 13.

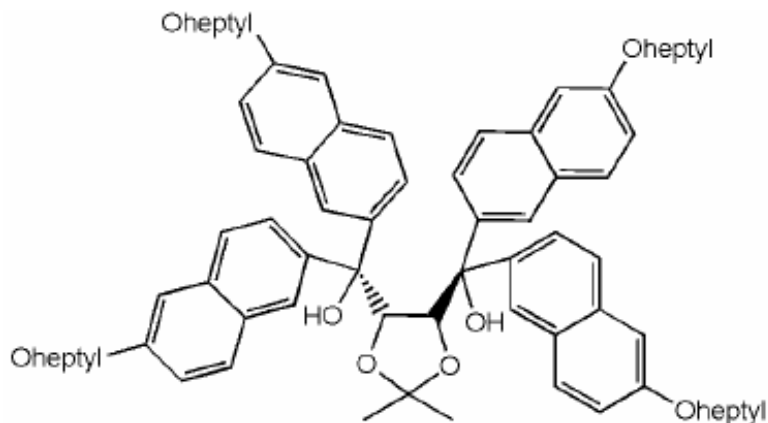
4. A symbol often used for a tartrate derivative is:



where R and R_1 are selected from a wide variety of chemical substituents. ECF 83-2, 31.

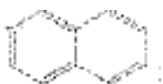
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5. The II-93-195 compound is represented graphically as:



As depicted, H3C is a lower alkyl group, CH3 is a lower alkyl group,

OH and HO are hydroxyl groups, C7H15 (O heptyl) is an acyclic aliphatic group, and

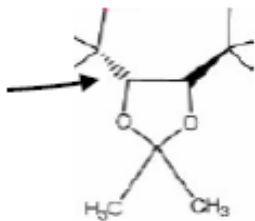


is a bivalent radical of a naphthalene group.

ECF 75, 14; ECF 83-1, 6.

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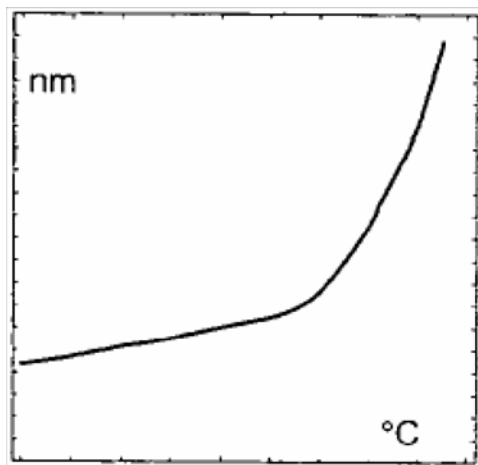
6. Compound II-93-195 is a SS enantiomer, which for this compound is graphically represented by a dashed bond as indicated here:



ECF 83-2, 36.

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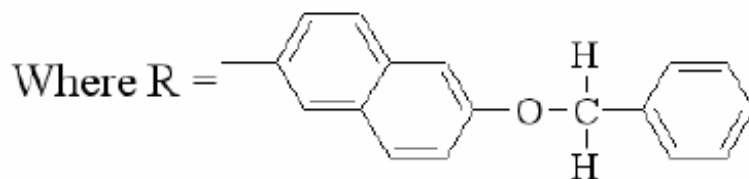
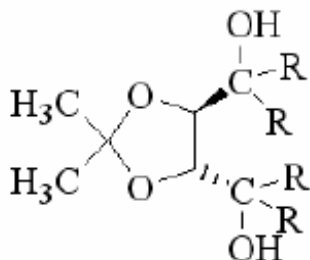
7. Compound II-93-195, or Compound 7, was tested by KDI and had a HTP $-33.5 \mu\text{m}^{-1}$ (a negative (-) sign indicating a left-handed twist) and a temperature performance between -20°C . and $+70^{\circ}\text{C}$ in the E44 host of:



ECF 83-2, 37, 41; ECF 75, 9.

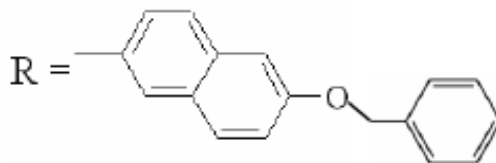
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8. AS713, or Compound 9, is a RR enantiomer which can be graphically represented as:



ECF 75, 15; ECF 83-2, 50.

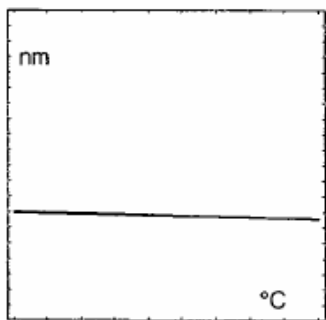
9. Another way to graphically represent the carbon and hydrogens in this R group is:



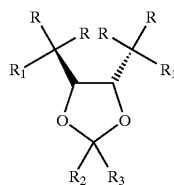
ECF 75, 16; ECF 83-2, 51.

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10. Compound 9 was tested by KDI and had a HTP of $+30.7 \mu\text{m}^{-1}$ (a positive (+) sign indicating a right-handed twist) and a temperature performance between -20°C . and $+70^{\circ}\text{C}$ in the E-44 host of :



11. Claim 1 of the '789 Patent is depicted graphically as a RR enantiomer as follows:



ECF 75, 1 and 17; 83-1, 1.

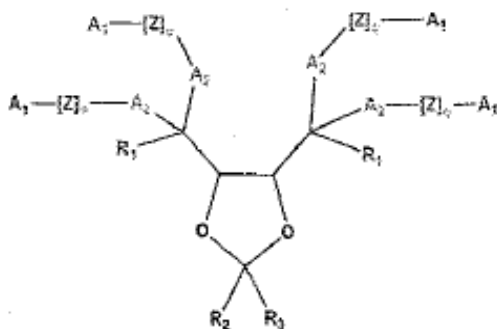
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12. The variables depicted in the compound claimed in Claim 1 are defined as follows:

Variable	Options
O	oxygen molecule
R	$A_1-[Z]_q-A_2-$
R_1	hydroxyl group or alkoxyl group or aryloxy group or arylalkoxy group
R_2	lower alkyl group or aryl unit or biaryl unit
R_3	lower alkyl group or aryl unit or biaryl unit
A_1	aromatic group or acyclic aliphatic group or alicyclic group
A_2	bivalent radical of a naphthalene group
Z	$-O-$ or $-OCO-$ or $-S-$ or $(CH_2)_nO$
q	if $Z = -O-$ or $-OCO-$ or $-S-$, then $q = 0$ or 1 if $Z = (CH_2)_nO$, then $q = 1$, and $n = 0$ to 5
n	0 to 5

ECF; 75, 2; 83-1, 2.

13. Using the variables listed in Claim 1 of the '789 Patent, the compound claimed in Claim 1 can be depicted graphically as follows:



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II. THE COURT'S CONCLUSIONS OF LAW

Plaintiff alleges in his complaint for correction of inventorship of United States Patent No. 6,830,789 that when the '789 Patent was filed he was omitted as an inventor without any deceptive intention on his part. The relief requested by plaintiff is that the Court correct his omission as an inventor because defendants have refused to consent to the correction.²⁰

A. Conception and Joint Inventorship

The touchstone of invention is conception.

[T]he test for conception is whether the inventor had an idea that was definite and permanent enough that one skilled in the art could understand the invention; . . . An idea is definite and permanent when the inventor has a specific, settled idea, a particular solution to the problem at hand, not just a general goal or research plan he hopes to pursue.

Burroughs Wellcome, 40 F.3d 1223, 1228 (C.A. Fed. 1994) (citations omitted).

“An idea is sufficiently ‘definite and permanent’ when ‘only ordinary skill would be necessary to reduce the invention to practice, without extensive research or experimentation.’”
Ethicon, 135 F.3d 1456, 1460 (Fed. Cir. 1998) (quoting *Burroughs Wellcome*, 40 F.3d at 1228).

²⁰ The defendants have asserted a laches defense on the grounds that plaintiff delayed filing suit for more than six years after actual or constructive knowledge of the cause of action. ECF 74, pp. 16-17. However, the testimony at trial and the documentary evidence reflects that when plaintiff learned he was not named as an inventor after the '789 Patent issued, he timely contacted the named inventors and owners of the '789 Patent in order to address that issue and filed the instant action after the inventors would not voluntarily consent to a correction. Accordingly, the Court in its discretion concludes that the laches defense should not be applied in this case to defeat plaintiff's claims for a correction of inventorship. *See Advanced Cardiovascular Systems, Inc., v. Scimed Life Systems, Inc.*, 988 F.2d 1157 (C.A. Fed. 1993).

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“Conception of a chemical substance requires both knowledge of a specific chemical structure of the compound and an operative method of making it.” *Fina Oil and Chemical Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed. Cir. 1997) (citing *Burroughs Wellcome*, 40 F.3d at 1229).

Section 116 of Title 35 of the United States Code provides for joint inventorship of patents as follows:

When an invention is made by two or more persons jointly, they shall apply for patent jointly and each make the required oath, except as otherwise provided in this title. Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.

35 U.S.C. § 116.

“Because ‘conception is the touchstone of invention,’ each joint inventor must generally contribute to the conception of the invention.” *Ethicon, Inc. v. United States Surgical Corp.*, 135 F.3d 1456, 1460 (Fed. Cir. 1998). However, “[o]ne need not alone conceive of the entire invention, for this would obviate the concept of joint invention.” *Fina Oil & Chem Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed. Cir. 1977). Further, a co-inventor need not make a contribution to every claim of a patent - a contribution to one claim is enough. *Ethicon, Inc. v. United States Surgical Corp.*, 135 F.3d 1456, 1460 (Fed. Cir. 1998); 35 U.S.C. § 116(3).

Section 116 “provides that a person not listed on a patent need not demonstrate that he made a contribution equal in importance to the contribution made by the listed inventors to claim his right to joint inventor status In fact, section 116 sets no explicit lower limit on the quantum or quality of inventive contribution required for a person to qualify as a joint inventor.”

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Eli Lilly and Co. v. Aradigm Corp., 376 F.3d 1352, 1358-59 (C.A. Fed. 2004). However, “a joint inventor must contribute in some significant manner to the conception of the invention each inventor must contribute to the joint arrival at a definite and permanent idea of the invention as it will be used in practice.” *Fina Oil and Chemical Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed. Cir. 1997) (internal quotations and citations omitted). “If a person supplies the required quantum of inventive contribution, that person does not lose his or her status as a joint inventor just because she used the services, ideas, and aid of others in the process of perfecting the invention In addition, a person is not precluded from being a joint inventor simply because his or her contribution to the collaborative effort is experimental.” *Fina Oil and Chemical Co.*, 123 F.3d at 1473 (citations omitted). Further, even in a patent where there are no method claims, an individual may be a co-inventor if he develops a method to make the claimed compound conceived of by another who was unable to make it without the help of the co-inventor. *See Board of Trustees of Florida State University v. American Bioscience*, 333 F.3d 1330, 1341-42 (Fed. Cir. 2003).²¹

²¹ Defendants cite the *Florida State University* case for the proposition Falana cannot be considered a joint inventor on the strength of his development of the Synthesis Protocol because there are no method claims in the ‘789 Patent. However, the *Florida State University* court actually noted that there are circumstances when an individual developing a method may be a co-inventor even in the absence of method claims, but noted that those circumstances were not present in *Florida State University* because there was no evidence in the record that the alleged co-inventor: a) knew that the inventors were attempting to make the claimed compounds, b) had contact with the inventors after the claimed compounds were conceived, c) either made or attempted to make the claimed compounds, d) had a firm and definite idea of the invention, or e) facilitated the reduction to practice of the claimed invention.

The instant case is readily distinguishable on the facts from the *Florida State University* case. In this case, Falana knew that the KDI Project team was attempting to make the claimed compounds - in fact he was part of the team which through its aggregate efforts contributed to

(continued...)

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It is “uncontroversial” that an alleged joint inventor “must demonstrate that his labors were “cojoined with the efforts of the named inventors.” *Eli Lilly and Co. v. Aradigm Corp.*, 376 F.3d at 1359. Joint inventorship can arise only when collaboration or concerted efforts occur, that is, “when the inventors have some open line of communication during or in temporal proximity to their inventive efforts.” *Eli Lilly and Co. v. Aradigm Corp.*, 376 F.3d at 1359. Such joint behavior can include collaboration or working under common direction, or one inventor building on another’s report or suggestion at a meeting. *Eli Lilly and Co. v. Aradigm Corp.*, 376 F.3d at 1359 (quoting *Kimberly-Clark Corp. v. Procter & Gamble Distrib. Co.*, 973 F.2d 911, 917 (Fed. Cir. 1992)).

Each joint inventor “need not make the same type or amount of contribution to the invention, . . . [r]ather, each needs to perform only part of the task which produces the invention.” *Ethicon, Inc. v. United States Surgical Corp.*, 135 F.3d at 1460 (internal quotations and citations omitted). “[T]he qualitative contribution of each collaborator is the key - each inventor must contribute to the joint arrival at a definite and permanent idea of the invention as it will be used in practice.” *Burroughs Wellcome*, 40 F.3d at 1228-29.

²¹(...continued)

the conception of the invention. Falana had regular contact with named inventors during their collaborative efforts which resulted in the conception of the invention. Falana developed the Synthesis Protocol for making the novel class of compounds claimed invention. Further, Falana attempted to make compounds in that class, and synthesized Compound 7, which significantly advanced the KDI Project teams joint effort to conceive novel chiral additives with certain characteristics and to obtain its own intellectual property. Within 6 months after Falana left KSU, Seed synthesized Compound 9 utilizing the Synthesis Protocol developed by Falana as reflected in the specification of the ‘789 Patent.

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A joint invention is the product of *collaboration* of the inventive endeavors of two or more persons *working toward the same end* and producing an invention by their *aggregate* efforts. To constitute a joint invention, it is necessary that each of the inventors work on the same subject matter and make some contribution to the inventive thought and to the final result. Each needs to perform but a part of the task if an invention emerges from all of the steps taken together. It is not necessary that the entire inventive concept should occur to each of the joint inventors, or that the two should physically work on the project together. One may take a step at one time, the other an approach at different times. One may do more of the experimental work while the other makes suggestions from time to time. The fact that each of the inventors plays a different role and that the contribution of one may not be as great as that of another does not detract from the fact that the invention is joint if each makes some original contribution, though partial, to the final solution of the problem.

Kimberly-Clark Corp. v. Procter & Gamble Distrib. Co., 973 F.2d 911, 916-17 (Fed Cir. 1992) (quoting *Monsanto Co. v. Kamp*, 269 F. Supp. 818, 824 (D.D.C. 1967))(emphasis in original).

B. Correction of Inventorship

Title 35 requires that a patent applicant disclose the names of all the inventors. However, 35 U.S.C. § 256 provides that a co-inventor who was omitted from an issued patent may be added as an inventor to the patent by the Court.

Title 35. Patents

§ 256. Correction of named inventor

Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Director may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Director shall issue a certificate accordingly.

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The issuance of a patent creates a “presumption that the named inventors are the true and only inventors.” *Ethicon, Inc. v. United States Surgical Corp.*, 135 F.3d at 1460 (citing *Hess v. Advanced Cardiovascular Systems, Inc.* 106 F.3d 976, 980 (Fed. Cir. 1997)). “[T]he burden of showing misjoinder or nonjoinder of inventors is a heavy one and must be proved by clear and convincing evidence.” *Hess v. Advanced Cardiovascular Systems, Inc.* 106 F.3d at 980 (quoting *Garrett Corp. v. U.S.*, 422 F.2d 874, 880 (Ct.Cl. 1970)). To meet this burden, “alleged co-inventors must prove their contribution to the conception with more than their own testimony . . . whether an inventor’s testimony is sufficiently corroborated is evaluated under a ‘rule of reason’ analysis.” *Trovan, Ltd. v. Sokymata SA*, 299 F.3d 1292, 1302 (Fed. Cir. 2002) (internal citations omitted). This analysis evaluates all pertinent evidence to determine the credibility of the alleged inventor’s claim to inventorship, including physical records made contemporaneously with the invention, circumstantial evidence of an independent nature about the inventive process, and oral testimony of someone other than the alleged inventor. *Trovan, Ltd. v. Sokymata SA*, 299 F.3d at 1302-03 (internal citations and quotations omitted).

C. Claim Construction

Because co-inventors need not contribute to the subject matter of every claim of the patent, inventorship is determined on a claim-by-claim basis. *Trovan, Ltd. v. Sokymata*, 299 F.3d at 1302. The inventorship analysis, like an infringement or invalidity analysis, starts with a “construction of each disputed claim to determine the subject matter encompassed thereby.” *Trovan, Ltd. v. Sokymata*, 299 F.3d at 1302. The second step is to “compare alleged contributions of each asserted co-inventor with the subject matter of the properly construed

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claim to then determine whether the correct inventors were named.” *Trovan, Ltd. v. Sokymata*, 299 F.3d at 1302 (citing *Ethicon*, 135 F.3d at 1462). If the alleged co-inventor in fact contributed to the invention defined by the claim at issue, he is a joint inventor of that claim. *Ethicon, Inc. v. United States Surgical Corp.*, 135 F.3d at 1461. However, if neither party has requested the Court to construe any of the terms in the claim at issue, or ever offered a construction of the claim at issue, then the right to request construction of the claim is waived and the parties have implicitly conceded that the meaning of the terms of the claim are clear and not in need of construction. *Eli Lilly and Co. v. Aradigm Corp.*, 376 F.3d at 1359.

Claim construction is a matter of law for the Court. *See Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 391 (1996). In determining the meaning of claims and claim terms, the Court “begin[s] with an examination of the intrinsic evidence, *i.e.*, the claims, the other portions of the written description, and the prosecution history (if any, and if in evidence).” *Apex, Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1371 (Fed. Cir. 2003). Dictionary definitions may also be consulted to establish ordinary meaning of the claim terms. *Id.* There is a “‘heavy presumption’ that claim terms carry their ordinary meaning as viewed by one of ordinary skill in the art.” *Id.* (citing *CCS Fitness Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)). If necessary, the Court can also look to extrinsic evidence, but such evidence “may not be relied upon . . . to vary or contradict the clear meaning of terms in the claims.” *Id.* (citing *Markman v. Westview Instruments, Inc.*, 52 F.3d at 981, *aff’d*, 517 U.S. 370 (1996)).

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Although the written description of the patent, *i.e.*, the specification, is helpful in determining the meaning of claim terms, this must be done only in light of two commonly applied claim construction canons: “(a) one may not read a limitation into a claim from the written description, but (b) one may look to the written description to define a term already in a claim limitation, for a claim must be read in view of the specification of which it is a part.” *Renishaw PLC v. Marposs Societa’ Per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998); *see also Vitronics Corp. v. Conceptronic, Inc.*, 90 F.2d 1576, 1582 (Fed. Cir. 1996) (the specification “is the single best guide to the meaning of a disputed term”). Further, although the patent drawings may depict a particular embodiment of the patent, such preferred embodiment does not limit proper claim construction. *PrimaTek II, L.L.C. v. Polypap, S.A.R.L.*, 318 F.3d 1143, 1148 (Fed. Cir. 2003).

D. Analysis

1. Claim Construction

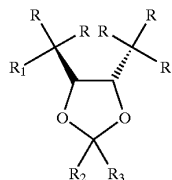
Falana contends that he is a co-inventor of the ‘789 Patent. Defendants argue that the Court should construe each claim to require a RR enantiomer of a tartrate derivative with a specified chemical formula that provides a substantially temperature independent helical twisting power (HTP), wherein “substantially temperature independent HTP” is defined as having a maximum change in peak reflection of 30 nm or less across a temperature range of +10° C. to +50 °C . ECF 81, p. 2.

The ‘789 Patent contains thirty (30) claims. However, the claims which were the focus of the parties at trial are Claim 1 and Claim 25.

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a. Claim 1

Claim 1 claims an optically active compound of the formula:



with the R groups as previously described in the Findings of Fact, *supra*. The drawing of the claimed “optically active” compound in Claim 1 depicts a *R,R* enantiomer, however, the language of Claim 1 itself does not require an *R,R* enantiomer. The Court construes Claim 1 to require a RR compound as depicted in the drawing of the optically active compound.

There are no terms in Claim 1 regarding temperature independent helical twisting power. While a patent specification may be helpful to determine the meaning of claim terms, the specification cannot be used to insert claim terms or limitations into the language of the claim. Accordingly, the Court construes Claim 1 as having no limitation or requirement regarding temperature independent helical twisting power with respect to the claimed compound.

b. Claim 25

Claim 25 is a dependant claim on Claim 23. Claim 23 claims an electro-optical cell comprising a layer containing a RR chiral material. Claim 25 claims an electro-optical cell in which the layer claimed in Claim 23 “further comprises a chiral material different from [the RR material claimed in Claim 23] and having an opposite twist sense.” A chiral material with an

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opposite twist sense from a RR chiral material is a SS material. Accordingly the Court construes Claim 25 to include a SS chiral compound.

There are no terms in Claim 23 or 25 regarding temperature independent helical twisting power. While a patent specification may be helpful to determine the meaning of claim terms, the specification cannot be used to insert claim terms or limitations into the language of the claim. Accordingly, the Court construes Claim 25 as having no limitation or requirement regarding temperature independent helical twisting power with respect to the claimed compound.

2. Joint Inventorship

Inventorship is a mixed question of fact and law. The determination of inventorship as a matter of law is based upon the Court's underlying determination of questions of fact.

In this case, plaintiff claims that he made a material contribution to the conception of the invention claimed in the '789 Patent and therefore should be named as a joint inventor. Section 116 sets no lower limit on the quantum or quality of the inventive contribution to be a joint inventor. However, the joint inventor must contribute to the invention in some significant manner, and must demonstrate that his efforts were cojoined with the efforts of the named inventors working toward the same end to produce the invention by their aggregate efforts.

The burden is on the plaintiff to demonstrate by clear and convincing evidence that he should have been included as an inventor on the '789 Patent, and the alleged co-inventor must corroborate his testimony regarding inventorship. In this case, the documentary evidence before

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the Court and the testimony of the named inventors themselves corroborates plaintiff's testimony and establishes that plaintiff has met his burden under the "rule of reason" analysis.²²

During the course of his work on the KDI Project team, plaintiff contributed to the conception of the claimed invention in Claim 1 and Claim 25 by development of the Synthesis Protocol and the synthesis of Compound 7. Falana utilized the Synthesis Protocol to synthesize Compound 7. Compound 7 is a SS chiral compound and is a naphthyl substituted TADDOL. The Synthesis Protocol could also be used to make RR chiral compounds as well, and other naphthyl substituted TADDOLs.

Falana did not merely follow the instructions of a plan preconceived by others in developing the Synthesis Protocol by which the claimed invention was ultimately synthesized. Seed himself described Falana as a member of the research team who was expected to - and did - work independently and utilize his own ideas and directions to reach the goals of the KDI Project, which produced the claimed invention of the '789 Patent.

The Synthesis Protocol described in the specifications of the '789 Patent was developed by Falana and was used by Seed to synthesize Compound 9, which is the naphthyl substituted TADDOL compound claimed in the '789 Patent. Plaintiff's development of the Synthesis

²² There were numerous occurrences at trial where the named inventors' trial testimony was not consistent with the documentary evidence and their own prior testimony and writings, and in some cases admitted that certain documentation and/or statements were not true but were made to serve another purpose. Such inconsistencies were typically explained by the defendants' witnesses as errors or mistakes in the record which were not discovered until after this lawsuit was instituted. However, after considering the documentary evidence which was created contemporaneously with the events now at issue, and after considering the witnesses' testimony and evaluating their credibility and veracity, the Court concludes that the named inventors' post-lawsuit characterization of the meaning and accuracy of the contemporaneous physical evidence against Falana's joint inventorship is not credible.

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Protocol was a significant contribution to the ultimate synthesis of the RR chiral compound claimed in the '789 Patent.

In making his contribution to the conception of the invention claimed in the '789 Patent, Falana collaborated with Doane, Khan and Seed on an regular basis during the entire time he worked on the KDI Project. Khan described the entire project as collaborative; Seed described the project as very much a team effort.

The record reflects numerous written exchanges and meetings among the inventors regarding the progress of the KDI Project and research plans for modification of molecules to move closer to the goal of the KDI Project, which specifically included the development of novel chiral compounds for which KDI could obtain its own patent. In addition, despite defendants' efforts to downplay the evidence, written documentation to various federal agencies regarding the KDI Project, including DARPA, NSF and INS, also corroborates the testimony of plaintiff and the named inventors regarding the role Falana played in his collaboration with Seed, Khan and Doane which resulted in the conception of the invention claimed in the '789 Patent.²³

Defendants have gone to great lengths in this case to dismiss Falana's research on the KDI Project as a failure because Seed, not Falana, ultimately synthesized Compound 9. However, synthesis of the final compound is not determinative of inventorship. The law does not require that a joint inventor conceive of the entire claimed invention, only that he contributes

²³ For example, Doane's April 13, 1999 letter to the INS describing Falana as "part of the research team" and states that "his outstanding performance led to the patent we are currently preparing and a proposal we submitted to NSF in December 1998." The NSF grant application prepared by Doane states that both Seed and Falana are "co-research institution investigators" and Doane testified that those titles accurately reflected their roles.

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to the claimed invention, which can occur when one inventor builds on the work of another.

Vanderbilt University v. ICOS Corp., 601 F.3d 1297, 1310 (Fed. Cir. 2010).

Each inventor need not make the same type or amount of contribution to the invention. No explicit lower limit on the quantum or quality of inventive contribution is required under Section 116 to be a joint inventor. A joint invention is simply the product of the aggregation of contributions to conception between two or more people from which the invention emerges. *See Fina Oil and Chem. Co. v. Ewen*, 123 F.3d at 1473.

The named inventors on the ‘789 Patent describe the KDI Project as “trial and error” process - a “shotgun” approach. This approach by its terms means that progress toward conception is made step-by-step, with one idea building on the next as the researchers moved forward together to conception of the invention. The individual contributions of Doane, Khan, Falana and Seed may have been different in kind and degree, but their combined contributions resulted in the invention embodied in the ‘789 Patent.

The Court finds that plaintiff has carried his burden of proof by clear and convincing evidence that he contributed to the conception invention claimed in the ‘789 Patent, and that he collaborated with the other joint inventors to combine his contributions with theirs to achieve the invention claimed in the ‘789 Patent. Both the documentary evidence and testimony of the inventors corroborates plaintiff’s testimony and unquestionably supports a conclusion that Falana was part of the daily interaction, exchange of ideas, joint effort and milieu of the inventive process in which the KDI Project team built on each other’s ideas, each contributing to the ultimate conception of the invention claimed in the ‘789 Patent.

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Falana's contributions to the conception of the claimed invention are documented in memos, reports, e-mail exchanges and in his three research notebooks, and include his contribution of the Synthesis Protocol and the synthesis of Compound 7, which contributed to the ultimate synthesis of Compound 9 claimed in '789 Patent. The Court finds that Falana's contributions to the conception of the claimed invention were significant and that, in aggregate with the contributions of Doane, Khan and Seek, resulted in the invention that is embodied in the '789 Patent.

Accordingly, the Court concludes that plaintiff Falana is a joint inventor of the '789 Patent.

III. ATTORNEY FEES

Having determined that plaintiff is the prevailing party in this case for correction of inventorship, the Court must next consider whether plaintiff is eligible for an award of attorney fees. 35 U.S.C. § 285 allows the Court to award reasonable attorney fee to a prevailing party in exceptional cases in cases for correction of inventorship. An award of attorney fees under § 285 is a two-step process. First the Court must determine whether a case is exceptional. If a case is exceptional, then the Court must determine whether attorney fees are appropriate. *See Pharmacia & Upjohn Co. v. Mylan Pharmaceuticals*, 182 F.3d 1356 (Fed. Cir. 1999); *Frank's Casing Crew v. PMR Technologies*, 2000 WL 33967508 (W.D. La. 2000).

"[I]nequitable conduct is a substantive patent issue that must be taken into consideration when in determinations under 35 U.S.C. § 285." *Pharmacia & Upjohn Co. v. Mylan Pharmaceuticals*, 182 F.3d at 1359 (citing *A.P. Chance Co. v. RTE Corp.*, 845 F.2d 1307 (Fed.

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Cir. 1988)). There are a number of factors that the Court may consider as a basis for determining whether a case is an exceptional case, which include inequitable conduct, presentation of a frivolous defense, vexatious conduct, and bad faith. *Id.*; *Gustafson, Inc. v. Intersystems Indus. Products., Inc.*, 897 F.2d 508, 511 (Fed. Cir. 1990) (citing *Kaufman Co. v. Lantech, Inc.*, 807 F.2d 970, 979 (Fed. Cir. 1986)). Further, the Court may consider the totality of the circumstances and multiplicity of conduct in determining whether a case is exceptional. *See Gustafson, Inc. v. Intersystems Indus. Products., Inc.*, 897 F.2d at 511; *Kaufman Co. v. Lantech, Inc.*, 807 F.2d at 979.

A. This Case is “Exceptional”

In examining the documentary evidence and listening to the testimony, the Court concluded in its Findings of Fact on multiple occasions that the testimony of defendants’ witnesses was not credible and of questionable veracity. Further and more troubling, one of the inventors testified that documents he prepared regarding Falana’s role in the ‘789 Patent for submission to federal agencies, including this Court, the Patent and Trademark Office, and the INS, were actually prepared to accomplish some other purpose. This completely defeats the credibility and veracity of that witness.

Another inventor also testified that an amazing number of documents, as well as prior deposition testimony, were inaccurate or incorrect, and that various testimony given during his deposition were not accurate statements. These occurrences were so significant - even going so far as testifying that the ‘789 Patent and its underlying documentation were incorrect as to a number of matters and that the claims did not accurately represent the invention claimed,

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including what constituted the novelty of the invention - that the Court raised its concerns during the trial regarding the credibility and veracity of the witness. In the Court's Findings of Fact, the Court specifically found certain aspects of the defense witnesses' testimony regarding Falana's role in conception of the claimed invention were not credible based on the Court's first-hand observation of those witnesses and their testimony in the entire context of this case.

There was an obvious and pervasive effort by defendants' witnesses throughout this case and at trial to downplay and marginalize Falana's role in the KDI Project with testimony that is belied by the contemporaneous documentary evidence and their own prior testimony. These repeated occurrence leaves the Court with the firm conclusion that the named inventors' present testimony regarding past events and documentation downplaying Falana's contributions to the conception of the claimed invention in the '789 Patent is not credible or believable, and is a blatant attempt to recast past events to support Falana's exclusion as a joint inventor.

Accordingly, the Court finds that, in the totality of the circumstances of this case, that defendants engaged in inequitable conduct, that they took an untenable position in defending this case, and that their continued defense of this case in the face of testimony that lacked credibility and veracity was frivolous and bordered on bad faith. As a consequence, the Court concludes that this case is "exceptional" within the meaning of § 285.

B. Attorney Fees are Justified and Warranted

Having determined that this case is exceptional, the Court must next determine whether an award of attorney fees is appropriate in this case. The trial judge is in the best position to weigh considerations such as "closeness of the case . . . the conduct of parties, and any other

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factors that may contribute to a fair allocation of the burdens of litigation as between winner and loser.” *Modine Manufacturing Co. v. Allen Group, Inc.*, 917 F.2d 538, 543 (1990) (internal citations omitted).

The integrity of the patent system in the United States depends, among other things, upon the naming of the correct inventors. In some cases, not naming the correct inventors can be a basis for invalidating the patent, which demonstrates the importance of identification of the inventors.

In this case, in the context of all of the evidence, the Court determined that the testimony of defendants’ witnesses at trial offered to defeat plaintiff’s claim was not credible and lacked veracity. Plaintiff is an individual without the resources of a large institution such as KSU to litigate the issue of inventorship. A significant commitment to the integrity of our patent system was required by plaintiff to persevere against a large institution and witnesses who admitted to making inaccurate statements in order to achieve other ends, especially in view of the fact that the ‘789 Patent has no commercial value to KDI or KSU, and in view of the fact that the Court’s determination that plaintiff is a co-inventor results in no monetary award or damages to plaintiff.

After carefully listening to the trial testimony of defendants’ witnesses to defeat Falana’s claim, the Court concluded that their testimony was not credible, lacked veracity, and was highly suspect, and that the defendants’ defense of this case was frivolous and bordered on bad faith. Failing to award attorney fees in these circumstances would have a chilling affect on individual inventors’ ability to come forward with claims regarding correct inventorship, which in turn imperils the integrity of our patent system.

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Accordingly, the Court concludes that an award of attorney fees to plaintiff's counsel in this case is both justified and warranted in order to prevent a gross injustice, and to protect the public interest in preserving confidence in the integrity of our system of patents in the United States. *See Nilssen v. Sylvania*, 528 F.3d 1352, 1359 (Fed. Cir. 2008) (litigation misconduct and inequitable conduct were sufficient grounds to award attorney fees to prevent gross injustice.).

IV. CONCLUSION

For the reasons contained herein, the Court has determined and declares that plaintiff Olsegun Falana is an inventor of the '789 Patent. The Court will separately publish a Judgment Entry on the issue of inventorship, and will order the Director of the United States Patent and Trademark Office, pursuant to 35 U.S.C. § 256, to add Falana as a named inventor on the '789 Patent and issue a certificate of correction.

Further, having found this case to be exceptional and attorney fees to be justified, plaintiff's counsel is granted leave until December 31, 2010 to submit his application for attorney fees. Defendants are granted leave until January 14, 2011 to respond to plaintiff's attorney fee application, and any reply must be filed by January 21, 2011.

IT IS SO ORDERED.

December 14, 2010
Date

s/ David D. Dowd, Jr.
David D. Dowd, Jr.
U.S. District Judge